

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical  
Information Center (STIC) no errors detected.**

Application Serial Number: 10/587,300  
Source: IFWP  
Date Processed by STIC: 08/9/2006

# ***ENTERED***

**CRF Errors Edited by the STIC Systems Branch**

Serial Number: 10/587,300

CRF Edit Date: 8/9/2006  
Edited by: DA

\_\_\_ **Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line**

\_\_\_ **Corrected the SEQ ID NO. Sequence numbers edited were:**

\_\_\_\_\_

\_\_\_ **Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:**

\_\_\_\_\_

~~\_\_\_~~ **Deleted: \_\_\_ invalid beginning/end-of-file text ; \_\_\_ page numbers**

\_\_\_ **Inserted mandatory headings/numeric identifiers, specifically:**

\_\_\_\_\_

\_\_\_ **Moved responses to same line as heading/numeric identifier, specifically:**

\_\_\_\_\_

\_\_\_ **Other:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



IFWP

## RAW SEQUENCE LISTING

DATE: 08/09/2006

PATENT APPLICATION: US/10/587,300

TIME: 14:13:10

Input Set : A:\pto.da.txt

Output Set: N:\CRF4\08082006\J587300.raw

```

4 <110> APPLICANT: Yule, D.I.
5   Wagner II, Larry
7 <120> TITLE OF INVENTION: Inositol 1,4,5-trisphosphate receptor
8   mutants and uses thereof
10 <130> FILE REFERENCE: 21108.0042U2
C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/587,300
C--> 12 <141> CURRENT FILING DATE: 2006-07-26
12 <150> PRIOR APPLICATION NUMBER: PCT/US2005/002380
13 <151> PRIOR FILING DATE: 2005-01-26
15 <150> PRIOR APPLICATION NUMBER: 60/539,245
16 <151> PRIOR FILING DATE: 2004-01-26
18 <160> NUMBER OF SEQ ID NOS: 32
20 <170> SOFTWARE: FastSEQ for Windows Version 4.0
22 <210> SEQ ID NO: 1
23 <211> LENGTH: 2710
24 <212> TYPE: PRT
25 <213> ORGANISM: Artificial Sequence
27 <220> FEATURE:
28 <223> OTHER INFORMATION: Description of Artificial Sequence:/note =
29   synthetic construct
31 <400> SEQUENCE: 1
32 Met Ser Asp Lys Met Ser Ser Phe Leu His Ile Gly Asp Ile Cys Ser
33   1           5           10           15
34 Leu Tyr Ala Glu Gly Ser Thr Asn Gly Phe Ile Ser Thr Leu Gly Leu
35           20           25           30
36 Val Asp Asp Arg Cys Val Val Gln Pro Glu Ala Gly Asp Leu Asn Asn
37   35           40           45
38 Pro Pro Lys Lys Phe Arg Asp Cys Leu Phe Lys Leu Cys Pro Met Asn
39   50           55           60
40 Arg Tyr Ser Ala Gln Lys Gln Phe Trp Lys Ala Ala Lys Pro Gly Ala
41 65           70           75           80
42 Asn Ser Thr Thr Asp Ala Val Leu Leu Asn Lys Leu His His Ala Ala
43           85           90           95
44 Asp Leu Glu Lys Lys Gln Asn Glu Thr Glu Asn Arg Lys Leu Leu Gly
45   100          105          110
46 Thr Val Ile Gln Tyr Gly Asn Val Ile Gln Leu Leu His Leu Lys Ser
47   115          120          125
48 Asn Lys Tyr Leu Thr Val Asn Lys Arg Leu Pro Ala Leu Leu Glu Lys
49   130          135          140
50 Asn Ala Met Arg Val Thr Leu Asp Glu Ala Gly Asn Glu Gly Ser Trp
51 145          150          155          160
52 Phe Tyr Ile Gln Pro Phe Tyr Lys Leu Arg Ser Ile Gly Asp Ser Val
53   165          170          175

```

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```

54 Val Ile Gly Asp Lys Val Val Leu Asn Pro Val Asn Ala Gly Gln Pro
55      180      185      190
56 Leu His Ala Ser Ser His Gln Leu Val Asp Asn Pro Gly Cys Asn Glu
57      195      200      205
58 Val Asn Ser Val Asn Cys Asn Thr Ser Trp Lys Ile Val Leu Phe Met
59      210      215      220
60 Lys Trp Ser Asp Asn Lys Asp Asp Ile Leu Lys Gly Gly Asp Val Val
61 225      230      235      240
62 Arg Leu Phe His Ala Glu Gln Glu Lys Phe Leu Thr Cys Asp Glu His
63      245      250      255
64 Arg Lys Lys Gln His Val Phe Leu Arg Thr Thr Gly Arg Gln Ser Ala
65      260      265      270
66 Thr Ser Ala Thr Ser Ser Lys Ala Leu Trp Glu Val Glu Val Val Gln
67      275      280      285
68 His Asp Pro Cys Arg Gly Gly Ala Gly Tyr Trp Asn Ser Leu Phe Arg
69      290      295      300
70 Phe Lys His Leu Ala Thr Gly His Tyr Leu Ala Ala Glu Val Asp Pro
71 305      310      315      320
72 Asp Phe Glu Glu Glu Cys Leu Glu Phe Gln Pro Ser Val Asp Pro Asp
73      325      330      335
74 Gln Asp Ala Ser Arg Ser Arg Leu Arg Asn Ala Gln Glu Lys Met Val
75      340      345      350
76 Tyr Ser Leu Val Ser Val Pro Glu Gly Asn Asp Ile Ser Ser Ile Phe
77      355      360      365
78 Glu Leu Asp Pro Thr Thr Leu Arg Gly Gly Asp Ser Leu Val Pro Arg
79      370      375      380
80 Asn Ser Tyr Val Arg Leu Arg His Leu Cys Thr Asn Thr Trp Val His
81 385      390      395      400
82 Ser Thr Asn Ile Pro Ile Asp Lys Glu Glu Lys Pro Val Met Leu
83      405      410      415
84 Lys Ile Gly Thr Ser Pro Leu Lys Glu Asp Lys Glu Ala Phe Ala Ile
85      420      425      430
86 Val Pro Val Ser Pro Ala Glu Val Arg Asp Leu Asp Phe Ala Asn Asp
87      435      440      445
88 Ala Ser Lys Val Leu Gly Ser Ile Ala Gly Lys Leu Glu Lys Gly Thr
89      450      455      460
90 Ile Thr Gln Asn Glu Arg Arg Ser Val Thr Lys Leu Leu Glu Asp Leu
91 465      470      475      480
92 Val Tyr Phe Val Thr Gly Gly Thr Asn Ser Gly Gln Asp Val Leu Glu
93      485      490      495
94 Val Val Phe Ser Lys Pro Asn Arg Glu Arg Gln Lys Leu Met Arg Glu
95      500      505      510
96 Gln Asn Ile Leu Lys Gln Ile Phe Lys Leu Leu Gln Ala Pro Phe Thr
97      515      520      525
98 Asp Cys Gly Asp Gly Pro Met Leu Arg Leu Glu Glu Leu Gly Asp Gln
99      530      535      540
100 Arg His Ala Pro Phe Arg His Ile Cys Arg Leu Cys Tyr Arg Val Leu
101 545      550      555      560
102 Arg His Ser Gln Gln Asp Tyr Arg Lys Asn Gln Glu Tyr Ile Ala Lys

```

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DATE: 08/09/2006

PATENT APPLICATION: US/10/587,300

TIME: 14:13:10

Input Set : A:\pto.da.txt

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```

103          565          570          575
104 Gln Phe Gly Phe Met Gln Lys Gln Ile Gly Tyr Asp Val Leu Ala Glu
105          580          585          590
106 Asp Thr Ile Thr Ala Leu Leu His Asn Asn Arg Lys Leu Leu Glu Lys
107          595          600          605
108 His Ile Thr Ala Ala Glu Ile Asp Thr Phe Val Ser Leu Val Arg Lys
109          610          615          620
110 Asn Arg Glu Pro Arg Phe Leu Asp Tyr Leu Ser Asp Leu Cys Val Ser
111 625          630          635          640
112 Met Asn Lys Ser Ile Pro Val Thr Gln Glu Leu Ile Cys Lys Ala Val
113          645          650          655
114 Leu Asn Pro Thr Asn Ala Asp Ile Leu Ile Glu Thr Lys Leu Val Leu
115          660          665          670
116 Ser Arg Phe Glu Phe Glu Gly Val Ser Thr Gly Glu Asn Ala Leu Glu
117          675          680          685
118 Ala Gly Glu Asp Glu Glu Glu Val Trp Leu Phe Trp Arg Asp Ser Asn
119          690          695          700
120 Lys Glu Ile Arg Ser Lys Ser Val Arg Glu Leu Ala Gln Asp Ala Lys
121 705          710          715          720
122 Glu Gly Gln Lys Glu Asp Arg Asp Val Leu Ser Tyr Tyr Arg Tyr Gln
123          725          730          735
124 Leu Asn Leu Phe Ala Arg Met Cys Leu Asp Arg Gln Tyr Leu Ala Ile
125          740          745          750
126 Asn Glu Ile Ser Gly Gln Leu Asp Val Asp Leu Ile Leu Arg Cys Met
127          755          760          765
128 Ser Asp Glu Asn Leu Pro Tyr Asp Leu Arg Ala Ser Phe Cys Arg Leu
129          770          775          780
130 Met Leu His Met His Val Asp Arg Asp Pro Gln Glu Gln Val Thr Pro
131 785          790          795          800
132 Val Lys Tyr Ala Arg Leu Trp Ser Glu Ile Pro Ser Glu Ile Ala Ile
133          805          810          815
134 Asp Asp Tyr Asp Ser Ser Gly Ala Ser Lys Asp Glu Ile Lys Glu Arg
135          820          825          830
136 Phe Ala Gln Thr Met Glu Phe Val Glu Glu Tyr Leu Arg Asp Val Val
137          835          840          845
138 Cys Gln Arg Phe Pro Phe Ser Asp Lys Glu Lys Asn Lys Leu Thr Phe
139          850          855          860
140 Glu Val Val Asn Leu Ala Arg Asn Leu Ile Tyr Phe Gly Phe Tyr Asn
141 865          870          875          880
142 Phe Ser Asp Leu Leu Arg Leu Thr Lys Ile Leu Leu Ala Ile Leu Asp
143          885          890          895
144 Cys Val His Val Thr Thr Ile Phe Pro Ile Ser Lys Met Thr Lys Gly
145          900          905          910
146 Glu Glu Asn Lys Gly Ser Asn Val Met Arg Ser Ile His Gly Val Gly
147          915          920          925
148 Glu Leu Met Thr Gln Val Val Leu Arg Gly Gly Gly Phe Leu Pro Met
149          930          935          940
150 Thr Pro Met Ala Ala Ala Pro Glu Gly Asn Val Lys Gln Ala Glu Pro
151 945          950          955          960

```

## RAW SEQUENCE LISTING

DATE: 08/09/2006

PATENT APPLICATION: US/10/587,300

TIME: 14:13:10

Input Set : A:\pto.da.txt

Output Set: N:\CRF4\08082006\J587300.raw

```

152 Glu Lys Glu Asp Ile Met Val Met Asp Thr Lys Leu Lys Ile Ile Glu
153           965           970           975
154 Ile Leu Gln Phe Ile Leu Asn Val Arg Leu Asp Tyr Arg Ile Ser Cys
155           980           985           990
156 Leu Leu Cys Ile Phe Lys Arg Glu Phe Asp Glu Ser Asn Ser Gln Ser
157           995           1000           1005
158 Ser Glu Thr Ser Ser Gly Asn Ser Ser Gln Glu Gly Pro Ser Asn Val
159       1010           1015           1020
160 Pro Gly Ala Leu Asp Phe Glu His Ile Glu Glu Gln Ala Glu Gly Ile
161 1025           1030           1035           1040
162 Phe Gly Gly Ser Glu Glu Asn Thr Pro Leu Asp Asp His Gly
163           1045           1050           1055
164 Gly Arg Thr Phe Leu Arg Val Leu Leu His Leu Thr Met His Asp Tyr
165           1060           1065           1070
166 Pro Pro Leu Val Ser Gly Ala Leu Gln Leu Leu Phe Arg His Phe Ser
167           1075           1080           1085
168 Gln Arg Gln Glu Val Leu Gln Ala Phe Lys Gln Val Gln Leu Leu Val
169       1090           1095           1100
170 Thr Ser Gln Asp Val Asp Asn Tyr Lys Gln Ile Lys Gln Asp Leu Asp
171 1105           1110           1115           1120
172 Gln Leu Arg Ser Ile Val Glu Lys Ser Glu Leu Trp Val Tyr Lys Gly
173           1125           1130           1135
174 Gln Gly Pro Asp Glu Pro Met Asp Gly Ala Ser Gly Glu Asn Glu His
175           1140           1145           1150
176 Lys Lys Thr Glu Glu Gly Thr Ser Lys Pro Leu Lys His Glu Ser Thr
177           1155           1160           1165
178 Ser Ser Tyr Asn Tyr Arg Val Val Lys Glu Ile Leu Ile Arg Leu Ser
179       1170           1175           1180
180 Lys Leu Cys Val Gln Glu Ser Ala Ser Val Arg Lys Ser Arg Lys Gln
181 1185           1190           1195           1200
182 Gln Gln Arg Leu Leu Arg Asn Met Gly Ala His Ala Val Val Leu Glu
183           1205           1210           1215
184 Leu Leu Gln Ile Pro Tyr Glu Lys Ala Glu Asp Thr Lys Met Gln Glu
185           1220           1225           1230
186 Ile Met Arg Leu Ala His Glu Phe Leu Gln Asn Phe Cys Ala Gly Asn
187           1235           1240           1245
188 Gln Gln Asn Gln Ala Leu Leu His Lys His Ile Asn Leu Phe Leu Asn
189       1250           1255           1260
190 Pro Gly Ile Leu Glu Ala Val Thr Met Gln His Ile Phe Met Asn Asn
191 1265           1270           1275           1280
192 Phe Gln Leu Cys Ser Glu Ile Asn Glu Arg Val Val Gln His Phe Val
193           1285           1290           1295
194 His Cys Ile Glu Thr His Gly Arg Asn Val Gln Tyr Ile Lys Phe Leu
195       1300           1305           1310
196 Gln Thr Ile Val Lys Ala Glu Gly Lys Phe Ile Lys Lys Cys Gln Asp
197       1315           1320           1325
198 Met Val Met Ala Glu Leu Val Asn Ser Gly Glu Asp Val Leu Val Phe
199       1330           1335           1340
200 Tyr Asn Asp Arg Ala Ser Phe Gln Thr Leu Ile Gln Met Met Arg Ser

```

RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/10/587,300

DATE: 08/09/2006  
 TIME: 14:13:10

Input Set : A:\pto.da.txt  
 Output Set: N:\CRF4\08082006\J587300.raw

```

201 1345          1350          1355          1360
202 Glu Arg Asp Arg Met Asp Glu Asn Ser Pro Leu Phe Met Tyr His Ile
203          1365          1370          1375
204 His Leu Val Glu Leu Leu Ala Val Cys Thr Glu Gly Lys Asn Val Tyr
205          1380          1385          1390
206 Thr Glu Ile Lys Cys Asn Ser Leu Leu Pro Leu Asp Asp Ile Val Arg
207          1395          1400          1405
208 Val Val Thr His Glu Asp Cys Ile Pro Glu Val Lys Ile Ala Tyr Ile
209          1410          1415          1420
210 Asn Phe Leu Asn His Cys Tyr Val Asp Thr Glu Val Glu Met Lys Glu
211 1425          1430          1435          1440
212 Ile Tyr Thr Ser Asn His Met Trp Lys Leu Phe Glu Asn Phe Leu Val
213          1445          1450          1455
214 Asp Ile Cys Arg Ala Cys Asn Asn Thr Ser Asp Arg Lys His Ala Asp
215          1460          1465          1470
216 Ser Val Leu Glu Lys Tyr Val Thr Glu Ile Val Met Ser Ile Val Thr
217          1475          1480          1485
218 Thr Phe Phe Ser Ser Pro Phe Ser Asp Gln Ser Thr Thr Leu Gln Thr
219          1490          1495          1500
220 Arg Gln Pro Val Phe Val Gln Leu Leu Gln Gly Val Phe Arg Val Tyr
221 1505          1510          1515          1520
222 His Cys Asn Trp Leu Met Pro Ser Gln Lys Ala Ser Val Glu Ser Cys
223          1525          1530          1535
224 Ile Arg Val Leu Ser Asp Val Ala Lys Ser Arg Ala Ile Ala Ile Pro
225          1540          1545          1550
226 Val Asp Leu Asp Ser Gln Val Asn Asn Leu Phe Leu Lys Ser His Asn
227          1555          1560          1565
228 Ile Val Gln Lys Thr Ala Met Asn Trp Arg Leu Ser Ala Arg Asn Ala
229          1570          1575          1580
230 Ala Arg Arg Asp Glu Val Leu Ala Ala Ser Arg Asp Tyr Arg Asn Ile
231 1585          1590          1595          1600
232 Ile Glu Arg Leu Gln Asp Ile Val Ser Ala Leu Glu Asp Arg Leu Arg
233          1605          1610          1615
234 Pro Leu Val Gln Ala Glu Leu Ser Val Leu Val Asp Val Leu His Arg
235          1620          1625          1630
236 Pro Glu Leu Leu Phe Pro Glu Asn Thr Asp Ala Arg Arg Lys Cys Glu
237          1635          1640          1645
238 Ser Gly Gly Phe Ile Cys Lys Leu Ile Lys His Thr Lys Gln Leu Leu
239          1650          1655          1660
240 Glu Glu Asn Glu Glu Lys Leu Cys Ile Lys Val Leu Gln Thr Leu Arg
241 1665          1670          1675          1680
242 Glu Met Met Thr Lys Asp Arg Gly Tyr Gly Glu Lys Gly Glu Ala Leu
243          1685          1690          1695
244 Arg Gln Ile Leu Val Asn Arg Tyr Tyr Gly Asn Ile Arg Pro Ser Gly
245          1700          1705          1710
246 Arg Arg Glu Ser Leu Thr Ser Phe Gly Asn Gly Pro Leu Ser Pro Gly
247          1715          1720          1725
248 Gly Pro Ser Lys Pro Gly Gly Gly Gly Gly Gly Pro Gly Ser Gly Ser
249          1730          1735          1740

```

RAW SEQUENCE LISTING ERROR SUMMARY  
PATENT APPLICATION: US/10/587,300

DATE: 08/09/2006  
TIME: 14:13:11

Input Set : A:\pto.da.txt  
Output Set: N:\CRF4\08082006\J587300.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:21; Xaa Pos. 2,3  
Seq#:24; Xaa Pos. 2,4,5



**VERIFICATION SUMMARY**

DATE: 08/09/2006

PATENT APPLICATION: US/10/587,300

TIME: 14:13:11

Input Set : A:\pto.da.txt

Output Set: N:\CRF4\08082006\J587300.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application No  
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:7134 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!  
L:7138 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:21  
L:7139 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0  
L:7326 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:23  
L:7693 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:0

**Raw Sequence Listing before editing,  
for reference only**



IFWP

## RAW SEQUENCE LISTING

DATE: 08/04/2006

PATENT APPLICATION: US/10/587,300

TIME: 14:28:19

Input Set : A:\21108.0042U2 Sequence Listing.txt

Output Set: N:\CRF4\08042006\J587300.raw

4 <110> APPLICANT: Yule, D.I.  
 5 Wagner II, Larry  
 7 <120> TITLE OF INVENTION: Inositol 1,4,5-trisphosphate receptor  
 8 mutants and uses thereof  
 10 <130> FILE REFERENCE: 21108.0042U2  
 C--> 12 <140> CURRENT APPLICATION NUMBER: US/10/587,300  
 C--> 12 <141> CURRENT FILING DATE: 2006-07-26  
 12 <150> PRIOR APPLICATION NUMBER: PCT/US2005/002380  
 13 <151> PRIOR FILING DATE: 2005-01-26  
 15 <150> PRIOR APPLICATION NUMBER: 60/539,245  
 16 <151> PRIOR FILING DATE: 2004-01-26  
 18 <160> NUMBER OF SEQ ID NOS: 32  
 20 <170> SOFTWARE: FastSEQ for Windows Version 4.0

Does Not Comply  
 Corrected Diskette Needed  
 (pg-1)

## ERRORED SEQUENCES

7795 <210> SEQ ID NO: 32  
 7796 <211> LENGTH: 9  
 7797 <212> TYPE: PRT  
 7798 <213> ORGANISM: Artificial Sequence  
 7800 <220> FEATURE:  
 7801 <223> OTHER INFORMATION: Description of Artificial Sequence; note =  
 7802 synthetic construct  
 7804 <400> SEQUENCE: 32  
 7805 Gly Tyr Gly Glu Lys Gly Glu Ala Leu  
 7806 1 5  
 7808 21108.0042P1  
 E--> 7810 1

deleted

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/10/587,300

DATE: 08/04/2006

TIME: 14:28:21

Input Set : A:\21108.0042U2 Sequence Listing.txt

Output Set: N:\CRF4\08042006\J587300.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application No  
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:7134 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!  
L:7138 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:21  
L:7139 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0  
L:7326 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:23  
L:7693 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:0  
L:7810 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:32